

Research Notes

Mohsin Dalvi – DT17MEC050

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hol2008:

Jeroen Hol. *Pose Estimation and Calibration Algorithms for Vision and Inertial Sensors.* **PhD thesis, Linköping University, Sweden, 2008.:**

Jeroen Hol. Pose Estimation and Calibration Algorithms for Vision and Inertial Sensors. PhD thesis, Linköping University, Sweden, 2008.:

Jeroen Hol. *Pose Estimation and Calibration Algorithms for Vision and Inertial Sensors.* **PhD thesis, Linköping University, Sweden, 2008.:**

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Hello World! [1]

1 Reviews

ID, Title, Author, Journal	Research areas, Tools	Objectives, Discussion	Methodology,	Conclusions, inference, Gaps	My
<ul style="list-style-type: none">• authyear• <i>paper title</i>• firstname1 surname1 and firstname2 surname2• journal	<ul style="list-style-type: none">• keyword1• keyword2	<ul style="list-style-type: none">• objec• method• disc		<ul style="list-style-type: none">• concl• gap	

ID, Title, Author, Journal	Research areas, Tools	Objectives, Discussion	Methodology,	Conclusions, My inference, Gaps
<ul style="list-style-type: none"> • aydin2006 • <i>Quaternion Based Inverse Kinematics for Industrial Robot Manipulators with Euler Wrist</i> • Yavuz Aydın and Serdar Kucuk • IEEE 3rd International Conference on Mechatronics (ICM 2006) 	<ul style="list-style-type: none"> • wrist IK • quaternion-vector pair for 6-dof pose 	<ul style="list-style-type: none"> • Double quaternion instead of dual quaternion • Approximate translation magnitue d as rotation by angle $\psi = \frac{d}{R}$ about normalised vector d. 		<ul style="list-style-type: none"> • Results obtained by using double quaternions are coordinate frame invariant.
<ul style="list-style-type: none"> • authyear • <i>paper title</i> • firstname1 surname1 and firstname2 surname2 • journal 	<ul style="list-style-type: none"> • keyword1 • keyword2 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap
<ul style="list-style-type: none"> • ge1998 • <i>Double quaternions for motion interpolation</i> • Ge, Q J and Varshney, Amitabh and Menon, Jai P and Chang, Chu-Fei • — 	<ul style="list-style-type: none"> • dual quaternions 	<ul style="list-style-type: none"> • Double quaternion instead of dual quaternion • Approximate translation magnitue d as rotation by angle $\psi = \frac{d}{R}$ about normalised vector d. 		<ul style="list-style-type: none"> • Results obtained by using double quaternions are coordinate frame invariant.

ID, Title, Author, Journal	Research areas, Tools	Objectives, Discussion	Methodology,	Conclusions, inference, Gaps	My
<ul style="list-style-type: none"> • laviola2003 [2] • <i>A Comparison of Unscented and Extended Kalman Filtering for Estimating Quaternion Motion</i> • Joseph J. LaViola Jr. • Proceedings of the American Control Conference Denver, Colorado June 4-6,2003 	<ul style="list-style-type: none"> • Quaternion • EKF • UKF 	<ul style="list-style-type: none"> • objec • method sampling rates 25, 80, 215 Hz • Ground truth obtained by passing data through zero phase shift filter to remove high-frequency noise. • Avg over Monte Carlo runs taken and RMS error of rotation parameter θ is calculated as $\sqrt{\frac{1}{2} \sum_{i=0}^{n-1} e_i^2}$ where $e_i = \frac{2(180)}{\pi} \arccos(\text{Sc}(q_i(\hat{q}_i)^{-1}))$ • disc 		<ul style="list-style-type: none"> • concl • gap 	
<ul style="list-style-type: none"> • lee2012a [3] • <i>Estimation of Attitude and External Acceleration Using Inertial Sensor Measurement During Various Dynamic Conditions</i> • Jung Keun Lee and Edward J. Park and Stephen N. Robinovitch • IEEE Transactions on Instrumentation and Measurement 	<ul style="list-style-type: none"> • IMU • attitude estimation • Kalman filter 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	
<ul style="list-style-type: none"> • authyear • <i>paper title</i> • firstname1 surname1 and firstname2 surname2 • journal 	<ul style="list-style-type: none"> • keyword1 • keyword2 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	

ID, Title, Author, Journal	Research areas, Tools	Objectives, Discussion	Methodology,	Conclusions, inference, Gaps	My
<ul style="list-style-type: none"> • oland2018 [4] • <i>Quaternion-based Control of Fixed-Wing UAVs Using Logarithmic Mapping</i> • Espen Oland • 9th International Conference on Mechanical and Aerospace Engineering, IEEE 	<ul style="list-style-type: none"> • DQ log map • UAV stability analysis 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	
<ul style="list-style-type: none"> • oliveira2015 [5] • <i>A new method of applying differential kinematics through dual quaternions</i> • Andre Schneider de Oliveira and Edson Roberto De Pieri and Ubirajara Franco Moreno • Robotica, Cambridge 	<ul style="list-style-type: none"> • DQ diff. kinematics, DQ Jacobian 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	
<ul style="list-style-type: none"> • authyear • <i>paper title</i> • firstname1 surname1 and firstname2 surname2 • journal 	<ul style="list-style-type: none"> • keyword1 • keyword2 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	
<ul style="list-style-type: none"> • thomas • <i>Approaching Dual Quaternions from Matrix Algebra</i> • Frederico Thomas • — 	<ul style="list-style-type: none"> • double quaternion derivation 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	

ID, Title, Author, Journal	Research areas, Tools	Objectives, Discussion	Methodology,	Conclusions, inference, Gaps	My
<ul style="list-style-type: none"> • wang2012a[6] • <i>The geometric structure of unit quaternion with application in kinematic control</i> • Xiangke Wang and Dapeng Han and Changbin Yu and Zhiqiang Zheng • Journal of Mathematical Analysis and Applications, Elsevier 	<ul style="list-style-type: none"> • DQ geom. struc., DQ log mapping, kinematic control 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	
<ul style="list-style-type: none"> • authyear • paper title • firstname1 surname1 and firstname2 surname2 • journal 	<ul style="list-style-type: none"> • keyword1 • keyword2 	<ul style="list-style-type: none"> • objec • method • disc 		<ul style="list-style-type: none"> • concl • gap 	
End of Notes					

References

- [1] Ramkumar Gandhinathan and Lentin Joseph. *ROS Robotics Projects: Build and control robots powered by the Robot Operating System, machine learning, and virtual reality*. Packt Publishing, 2 edition, 2019.
- [2] Joseph J. LaViola, Jr. A comparison of unscented and extended kalman filtering for estimating quaternion motion. In *Proceedings of the 2003 American Control Conference*, pages 2435–2440, 2003.
- [3] Jung Keun Lee, Edward J. Park, and Stephen N. Robinovitch. Estimation of Attitude and External Acceleration Using Inertial Sensor Measurement During Various Dynamic Conditions. *IEEE Transactions on Instrumentation and Measurement*, 61(8):2262–2273, 2012.
- [4] Espen Oland. Quaternion-based control of fixed-wing uavs using logarithmic mapping. In *9th International Conference on Mechanical and Aerospace Engineering*, 2018.
- [5] Andre Schneider de Oliveira, Edson Roberto De Pieri, and Ubirajara Franco Moreno. A new method of applying differential kinematics through dual quaternions. *Robotica*, 35:907–921, 2015.
- [6] Xiangke Wang, Dapeng Han, Changbin Yu, and Zhiqiang Zheng. The geometric structure of unit dual quaternion with application in kinematic control. *Journal of Mathematical Analysis and Applications*, 389(2):1352 – 1364, 2012.